

REMARKS

Claims 1-13 are pending in the application. Claims 1, 11, 12 and 13 have been amended. Support for the amendments is found at least at Fig. 6 and paragraph [0100] of the application. Applicants submit that no new matter has been added to the application by the Amendment.

Claim Rejections – 35 U.S.C. § 101

The Examiner rejected claim 13 as being directed to non-statutory subject matter. Applicants have amended claim 13 to recite a practical application of the code that produces a tangible result. Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 101 rejection of claim 13.

The Present Invention

As described at paragraphs [0083] to [0089] of the application, an embodiment of the present invention initially accelerates the shifting of a focusing section toward a new layer and then as the new layer is approached, decelerates the shifting of the focusing section. The deceleration is performed in two phases: an initial phase of deceleration performed at a first acceleration and a second phase of deceleration performed at a second acceleration, where the second acceleration is smaller than the first acceleration.

In Figs. 4A and 4B of the application, there are shown plots of the velocity of the focusing section over intervals X and Y. Interval X includes a period of increasing velocity, i.e. acceleration in the direction of the target layer, at the beginning of the shifting of the focusing section, followed by a period of constant velocity toward the target layer. In the interval X, the period of constant velocity is followed by the initial phase of reducing the velocity, i.e. deceleration of the focusing section. Interval Y shows the second phase of deceleration performed at the second acceleration. Examining the slopes of the velocity profiles (i.e. acceleration) of Figs. 4A and 4B in the intervals X and Y one can see that the absolute value of the acceleration, during the deceleration phase in the interval Y is less than the absolute value of acceleration during the deceleration phase in the interval X.

The control signals for causing the period of acceleration and for causing the periods of deceleration at the first and the second accelerations are shown in Figs. 5 and 6 corresponding to the velocity profile of Fig. 4A, and in Fig. 9, corresponding to the velocity profile of Fig. 4B. Specifically, in Fig. 6, which corresponds to shifting the focus section away from the disc, there is shown in interval X an acceleration signal of negative polarity corresponding to an initial acceleration period for accelerating the focus section away from the disc and a positive signal corresponding to the initial deceleration phase in which the velocity of the focus section decreases thus accelerating toward the disc. This is followed in interval Y pulses of a first type which accelerate the focusing section toward the focus controllable range alternating with pulses of a second type which accelerate the focusing section away from the focus controllable range. (See paragraph [0100]).

Similarly, as shown in Fig. 9, and described in paragraph [0117], which describe a procedure for shifting the focus section toward the disc, there is shown in interval X an acceleration signal of positive polarity, corresponding to an initial acceleration period for accelerating the focusing section toward the disc and a negative signal corresponding to the initial deceleration phase in which the velocity of the focusing section decreases thus accelerating away from the disc. This is followed in interval Y pulses of a first type which accelerate the focusing section toward the focus controllable range alternating with pulses of a second type which accelerate the focusing section away from the focus controllable range.

Claim Rejections – 35 U.S.C. § 102

The Examiner rejected claims 1-13 as being anticipated by U.S. Patent Application Publication No. 2004/0202084 A1 (Manoh et al.). Applicants respectfully traverse the rejection.

Claim 1 recites, *inter alia*,

a control section which generates a control signal such that the focal point of the light being shifted toward the data storage layer is decelerated initially at a first acceleration and then at a second acceleration, the absolute value of the second acceleration being smaller than that of the first acceleration and the

control signal for decelerating the focal point of the light at the second acceleration at least includes a first type of pulses that accelerate the focal point toward the focus controllable range and a second type of pulses that accelerate the focal point away from the focus controllable range.

Note that claim 1 is directed to only the deceleration phase of the shifting operation, although the terms "acceleration" are used generically to describe the deceleration of the focus section during the deceleration phase.

The Examiner cites paragraphs 62-67, 109-125 and Fig. 11 of Manoh et al. stating that Manoh et al. performs deceleration at a first acceleration and at a second acceleration and that the absolute value of the second acceleration is smaller than the first acceleration. Applicants respectfully disagree.

Manoh et al. is directed to a method of shifting a focus section from a first layer to a second layer. In Fig. 11C there is shown the drive signal for accomplishing the shifting operation. Pulse ACCE is a positive polarity pulse that is the drive signal for accelerating the focus section in a direction from a first layer to a second layer (paragraph 110, 114). Pulse OECCE (DECCE in the specification) is a negative polarity pulse which is the drive signal for reducing the velocity of the focus section, i.e. decelerating the focus section, as it approaches the second layer. As described at paragraphs 121-122, the dynamics of the focus section are set by controlling the amplitude and/or the timing of the ACCE acceleration pulse and the OCCE deceleration pulse.

As made clear by Manoh et al., pulse ACCE is a signal for accelerating the control section in the direction of a target layer and is not a control signal for decelerating the focus section once accelerated. Accordingly, Manoh et al. at Fig. 11C and paragraphs 110-125, by disclosing only a single decelerating pulse, discloses decelerating the focus section at only a first acceleration and does not teach, suggest or disclose decelerating the focus section initially at a first acceleration followed by a second acceleration, as recited by amended claim 1.

Nor does Manoh et al. disclose a control signal for decelerating the focal point during the second acceleration that includes a first type of pulses that accelerate the focal point toward the

focus controllable range and a second type of pulses that accelerate the focal point away from the focus controllable range, as recited in amended claim 1.

In view of the above, Applicants submit that Manoh et al does not anticipate amended claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 102 rejection of claim 1.

Claims 11, 12 and 13, which include the same patentable subject matter as claim 1, are allowable over Manoh et al. for the same reasons that claim 1 is allowable. Further, claims 2-10 are allowable over Manoh et al., at least by their dependency on allowable claim 1. Accordingly Applicants respectfully request reconsideration and withdrawal of the § 102 rejection of claims 2-13.

Claim Rejections – 35 U.S.C. § 103

In an alternate rejection, the Examiner rejected claims 1-13 as being unpatentable over U.S. Patent No. 6,370,093 (Tada et al.).

In respect to claim 1, the Examiner first states that Tada et al. discloses a control section that generates a control signal such that the focal point of the light being shifted toward the data storage layer is decelerated initially at a first acceleration [Vbrk1] and then at a second acceleration [Vbrk2], the absolute value of the second acceleration being smaller [Fig. 18D] than that of the first acceleration. The Examiner further states that Tada et al. discloses a second type of pulses [Fig. 18C] that decreases the acceleration [col. 12, line 46 to col. 13, line 23; col. 16, line 36 to col. 17. line 8]. Applicants respectfully traverse the rejection.

Claim 1 recites, *inter alia*,

a control section which generates a control signal... the control signal for decelerating the focal point of the light at the second acceleration at least includes a first type of pulses that accelerate the focal point toward the focus

controllable range and a second type of pulses that accelerate the focal point away from the focus controllable range.

Figs. 18C and 18D and col. 16 line 36 to col. 17, line 8 teach an acceleration pulse [Fig. 18B] and a deceleration pulse train in which the series of deceleration pulses [Fig. 18C] are of a single sense, each of which induces an acceleration opposite to that of the acceleration pulse and having the effect of monotonically decreasing the velocity of the objective lens [Fig. 18D] such that the velocity of the objective lens is successively reduced to zero as it approaches of the target layer. Thus, Taba et al. at cols. 16 -17 and Figs. 18C-18D discloses a series of deceleration pulses that accelerates the focus shifting section in only a single direction opposite to that induced by the acceleration pulse and does not disclose first and second types of deceleration pulses that respectively accelerate the focus section toward and away from a focus controllable range as recited by amended claim 1.

The Examiner also refers to pulses Vbrk1 and Vbrk2, which are disclosed at col. 16, line 65 to col. 17, line 68 and Figs. 19 and 20. As described and shown, pulses Vbrk1 and Vbrk2 are deceleration pulses where the magnitude of Vbrk2 is determined based on magnitude of the focusing error signal. However, as is the case with the deceleration pulses shown in Figs. 18C and 18D, Vbrk1 and Vbrk2 always create an acceleration which is opposite to that created by the acceleration pulse. Consequently, Vbrk1 and Vbrk2 are not first and second types of deceleration pulses that respectively accelerate the focus section toward and away from a focus controllable range as recited by amended claim 1.

The Examiner admits that Tada et al. does not teach two acceleration pulses as claimed but states that Tada et al. does teach changing the magnitude of the acceleration pulses (col. 22-23 and Figs. 31 and 32) and it would be obvious to substitute the changing of [deceleration] pulses.

It appears that the Examiner is looking at two separate figures, 31 and 32 to somehow construct a teaching by Tada et al. of combining together into a single signal an acceleration pulse A3 taught by Tada et al. for focus jumping at an inner radius and A5, taught by Tada et al. for focus jumping at an outer radius. The combination of A3 and A5 is clearly not taught or

suggested by Tada et al. Further, even if A3 and A5 were combined to a single signal and then the combined signal was used as deceleration pulses, the combination would still not include a first type of pulses that accelerate the focal point toward the focus controllable range and a second type of pulses that accelerate the focal point away from the focus controllable range.

The Examiner further attempts to justify the combination by comparing Applicants Fig. 4B to Tada et als. Fig. 18D. Applicants strongly disagree with the Examiner's conclusion.

In the first instance, Applicant's Fig. 4B clearly shows an interval of shifting where the velocity is both positive and negative during the period of deceleration, whereas Fig. 18D shows only a positive velocity during deceleration. One of ordinary skill would clearly understand that the interval of negative velocity can be caused only by an acceleration which is opposite to that occurring during intervals of positive acceleration. Thus, the Examiner's comparison of Figs. 4B and 18D only goes to prove the distinguishing features of claim 1 over Tada et als. teachings.

None of the embodiments disclosed by Tada et al. disclose, teach or suggest a control signal for decelerating a focus section which includes both a first period of acceleration and a second period of acceleration where the second acceleration at least includes a first type of pulses that accelerate the focal point toward the focus controllable range and a second type of pulses that accelerate the focal point away from the focus controllable range, as recited by amended claim 1.

Applicants submit that Tada et al does not make claim 1 obvious. Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claim 1.

Claims 11, 12 and 13 include the same patentable features as claim 1 and thus are allowable over Tada et al. for the same reasons that claim 1 is allowable. Further, claims 2-10 are allowable over Tada et al., at least by their dependency on allowable claim 1. Accordingly Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 2-13.

Conclusion

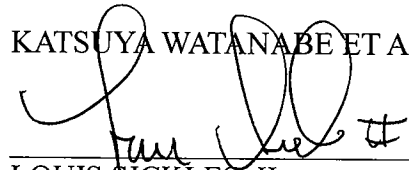
Insofar as the Examiner's objections and rejections to claims 1-13 have been fully addressed, the instant application including claims 1-13 is in condition for allowance. Withdrawal of the Final Rejection, formal entry of the present "Amendment After Final," and issuance of a Notice of Allowability of claims 1-13 is therefore earnestly solicited.

Respectfully submitted,

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